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Cooperative State
Research Service

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Ser

Animal Health Science Research Advisory Board

1987 Annual Report



ANIMAL HEALTH SCIENCE RESEARCH ADVISORY BOARD

1987 ANNUAL REPORT

Cooperative State Research Service
United States Department of Agriculture

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ANIMAL HEALTH SCIENCE RESEARCH ADVISORY BOARD

1986 ANNUAL REPORT

1. Current Concerns in Animal Health

Losses from food animal diseases are estimated to be 18 - 20 percent of the \$70 billion gross income from animals each year. This touches every person in this nation, rich or poor, since it adds to the first-dollar-cost of food.

Research is urgently needed to solve problems which cause inefficient production and reduced productivity. The emphasis is no longer on pounds and numbers but on quality and efficiency of use of capital inputs of labor, equipment, feed, facilities, land, drugs and antibiotics and other high cost chemicals.

Today, more than ever before, the consumer is questioning the credibility of our animal food chain quality and safety. We must develop technologies to provide a safer and higher quality animal food source and restore that credibility. Improved food safety and quality through enhanced animal health must be a driving emphasis in our research.

Previously unimaginable improvements in production efficiency are now possible through application of "cutting edge" technologies of molecular biology and computer assisted systems. If these can be brought to bear on problems in animal health and disease facing the livestock and poultry industries today, tomorrow will surely bring solutions that have been evading researchers for decades.

The Food and Agriculture Act of 1977 (PL 95-113) recognized significant research opportunities to increase livestock production efficiency and food safety through emphasis on solving animal health problems.

Two new extramural programs were initiated which provide USDA support for animal health and disease research under authorizations of PL 95-113. These are the Animal Health and Disease Research (Section 1433) Formula Program and the Animal Health Special Research Grant Program, (Section 1414 (c)(1) amending Public Law 89-106). Provisions of these authorizations for animal health research were further strengthened under amendments included in Public Law 97-98, the Agriculture and Food Act of 1981, and Public Law 99-198, the Food Security Act of 1985. The U. S. Department of Agriculture Appropriation Act for Fiscal Years 1979-1986 has provided funds to carry out animal health research provisions of Public Law 95-113 and Public Law 99-198 at levels indicated in Table 1.

II. Status of Programs

1. Section 1433, Animal Health and Disease Formula Program

Program Objectives

The Animal Health and Disease Formula Program (Section 1433) is directed toward improving the health and productivity of animals and the welfare of producers and consumers of animal products; protecting human health through control of animal disease transmissible to humans; minimizing livestock and poultry losses due to transportation and handling; facilitating the effective treatment and prevention of food animals and horse diseases, protecting livestock and poultry from diseases of wildlife; and providing improved methods of controlling birth of predators and other animals.

Approach

Under the Section 1433 formula program, the USDA has been able to strengthen its animal health research partnership with the State Agricultural Experiment Stations and to extend this partnership to all Colleges and Schools of Veterinary Medicine. Provisions of Sections 1433 are unique in that funds are distributed to the States in relation to State's livestock importance and its capacity to conduct animal health and disease research. When more than one eligible institution exists within a State, The State's entitlement is distributed to these institutions in accordance with their animal health research capacities. State contributions to expand animal health research are encouraged through a requirement that each State match any Section 1433 funds received annually in excess of \$100,000.

Formula Provisions

Section 1433 provides for support of livestock and poultry disease research in Colleges of Veterinary Medicine and in eligible State Agricultural Experiment Stations. These funds are distributed as follows:

48 percent are distributed in an amount proportionate to the value of and income to producers from domestic livestock and poultry in each State to total value of and income to producers from domestic livestock and poultry in all States.

Livestock Value (USDA-Data)	24%
Livestock Income (USDA-Data)	24%

48 percent are distributed in an amount proportionate to the animal health research capacity of the eligible institutions in each State to the total animal health capacity in all the States.

Expenditures for Animal Health Research	24%
(Eligible Institution Data)	
Scientist Years for Animal Health Research	24%
(Eligible Institution Data)	

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EXECUTIVE SUMMARY

The Animal Health Science Research Advisory Board was established by Public Law 95-113, the Food and Agriculture Act of 1977, to advise the Secretary on the implementation and priorities of animal health research authorized by the Act. This includes two programs, authorizing extramural, Federal support for animal health research -- Section 1433, the Animal Health and Disease Formula Research Program, and Section 1414 oco(c)(1), Special Research Grants for animal health. Both programs are administered by the Cooperative State Research Service and have received appropriations over 9 consecutive years (Fiscal Years 1979-1987). The Animal Health Science Research Advisory Board has provided consultation and advice essential to the implementation of these programs.

New research under these programs was initiated in Colleges and Schools of Veterinary Medicine, State Agricultural Experiment Stations, and in other cooperating institutions. Currently, research projects aimed at providing solutions to food animal health problems are being conducted under the Section 1433 Program. Under the Special Research Grant Program, 599 projects have been selected competitively for funding from 4,074 proposals submitted by scientists over an 8 year period. Many of these funded projects are still in progress.

This report summarizes the current status of animal health research programs under Section 1433 and Special Research Grants and the 1987 recommendations and actions of the Animal Health Science Research Advisory Board.

Four percent is retained by the Department of Agriculture for administration, program assistance to the eligible institutions, and program coordination.

In a State with two or more eligible institutions, that State's allocation is distributed in the proportion that the animal health research capacities of these institutions bear to the total capacity of the State.

Eligible institutions must provide non-Federal matching funds in States receiving annual amounts in excess of \$100,000 under this authorization.

Current Activities

For Fiscal Year 1987 a total of \$5,191,248 was distributed to 50 states and Puerto Rico. Funds were distributed to 39 Agricultural Experiment Stations, 12 Agricultural Experiment Stations and Colleges of Veterinary Medicine and 16 separate Colleges of Veterinary Medicine. Programs of research were received from all institutions.

Recommendations of the Animal Health Science Research Advisory Board are being followed in program administration by CSRS (i.e., scope and priorities of eligible research, determination of research capacity of eligible institutions, and other questions on program administration). In accordance with advice of the Board, emphasis in this research centers on the solution of high-priority diseases or other health hazards in the production of livestock, poultry, and aquaculture species.

Research is in progress on more than 500 projects seeking solutions to infectious diseases or parasitic problems of food animals and horses. Strong emphasis is being placed on solution to respiratory, enteric, and reproductive diseases. Other major problems such as mastitis, pseudorabies, BVD, internal parasites, and toxicoses are being investigated. New or improved methods are being developed to control these diseases and other high priority problems such as shipping fever, salmonellosis, bluetongue, and TGE. New biotechnology procedures including genetic engineering, monoclonal antibody, virus fingerprinting, and subunit immunization are being employed to accelerate needed breakthroughs in diagnosis and prevention of animal pathogens.

Table 2 provides data on the amount of Section 1433 funds that have been received by individual institutions, 1980-1987.

2. Section 1414(c)(1), Special Research Grants in Animal Health

Animal health research under the Special Research Grant Program has placed emphasis on the solution of problems of highest priority and national importance. Grants of up to \$150,000 currently are made for funded projects--permitting in-depth studies by some of the Nation's most highly trained, experienced and productive animal health scientists. Projects are funded with a single grant and expenditures are permitted over a period of up to 5 years depending upon budgets and work plans as presented in the proposal. This Program is administered by the Cooperative State Research Service.

Eligible diseases and their priorities are identified annually by the Animal Health Science Research Advisory Board through recommendations from national livestock and poultry commodity organizations and other groups concerned with animal health. A competitive process with peer panel evaluation of proposals is used in the placement of all grants made under this Program.

During the nine years of competition in Animal Health Special Research Grants (1979-1987) there has been a total submission of 4,074 proposals requesting over \$477 million; 599 proposals have received awards totaling \$40,888,183. Table 4 provides a summary of the awards listed by commodity and diseases. Data for 1979 include \$505,756 of Special Research Grant funds awarded noncompetitively to 17 State Agricultural Experiment Stations as Supplementary Research Grants.

The Board reviewed the animal health priority lists submitted for its consideration by the principal national livestock commodity and veterinary medical organizations and USDA recommendations. The Board then developed new guidelines for animal health research priorities that were recommended to CSRS for the Animal Health Special Grants Program for 1988.

The Board recommended that the percentage of funds allocated for each commodity research category remain the same as in 1987. The Board reviewed the specific eligible areas of inquiry under each commodity category of research and made the recommendations as in Table 5.

Competitive Research Grants Program (CRGP)

The Competitive Research Grants Program covers plant science, animal science, human nutrition and biotechnology. Elements of the program directly or indirectly related to animal health include animal molecular biology, growth and development and animal science, which includes a prescribed amount for reproductive physiology and for brucellosis research. In 1987, approximately \$7 million of the Competitive Research Grants Program budget was awarded to support research with animal health implications in biotechnology and animal science.

Report from the Center for Veterinary Medicine, FDA - Norris Alderson

Norris Alderson reported last year that FY 1987 was to be the last year of the extramural minor species research program. This changed during FY 1987 as additional funds were received and the Center for Veterinary Medicine is restoring the minor species cooperative agreement funds to complete the program as originally planned. This means that FY 1988 will be the last year for the extramural minor species program. Intramurally, the Center for Veterinary Medicine will continue its program addressing those minor species problems which are appropriate for the Center.

One new extramural program, which began in FY 1987, is our aquatic research program. This program is designed to evaluate the disposition of various drugs when used in aquatic species. Specific emphasis is on the metabolism of these compounds as well as potential residues.

As was reported to you last year also, emphasis is increasing on the development of analytical methods and detection of drugs and chemicals in food and in feeds. In FY 1987, we funded four new cooperative agreements to evaluate new analytical chemistry procedures in the detection of drug residues in food. The purpose of these agreements is not to necessarily develop specific new chemical methods but rather to evaluate new procedures such as super fluid chromatography, solid phase extraction, tandem mass specs, and immunoassays as procedures to increase our ability to monitor food for drug residues.

At the same time, we have an intensive program of research developing specific methods for which needs have been identified. We have evaluated the methodology for all of the currently approved drugs and found that there are many currently approved drugs whose methods do not meet today's standards for acceptance of analytical methods. On the high priority list are approximately 40 compounds. These specific methods are being developed in our own FDA labs both at Beltsville and in our district labs. We are also cooperating with USDA in their program of methods development. There will also be some extramural funds directed towards specific methods.

Another item in our extramural program beginning in FY 1988 will be the evaluation of bound residues. The purpose of this program will be to evaluate the level of residues which are not detected in normal analytical procedures due to specific binding.

Minor Use Animal Drugs, IR-4 Research Program - Howard Teague

Since January 1983, 143 animal drug requests have been submitted to IR-4 Headquarters by the 4 regions (Northeastern, North Central, Southern and Western). Twenty-seven of these are active projects at 14 universities, USDI, Fish and Wildlife Service, USDA, Agricultural Research Services and 13 pharmaceutical firms. Fifty percent of these animal drug requests are not considered valid projects for the following reasons: (a) Drug requested has been approved for the same claim and animal species, (b) the drug request has no therapeutic claim, (c) the drug request does not meet the qualification under 21CFR 514 (New Animal Drug Application: Safety and Effectiveness Data Supporting the Approval of Minor Use New Animal Drugs), e.g., a disease claim in a major species which occurs nationwide, and (d) the drug request needs extensive toxicity and chemistry data, e.g., metabolism data for sheep claims.

TABLE 1

ANIMAL HEALTH RESEARCH FUNDS 1979 - 1987

<u>Item</u>	<u>FY 1979</u>	<u>FY 1980</u>	<u>FY 1981</u>	<u>FY 1982</u>	<u>FY 1983</u>	<u>FY 1984</u>	<u>FY 1985</u>	<u>FY 1986</u>	<u>FY 1987</u>
Formula Funds	5,000	6,000	6,500	5,760	5,760	5,760	5,760	5,191	5,191
(Sec. 1433)									
Spec. Research Grants									
Animal Health	10,000	7,000	5,050	7,156	7,156	7,156	6,000	5,408	5,408
Minor Use Animal Drugs	----	----	----	240	240	240	240	229	229
Total	15,000	13,000	11,550	13,156	13,156	13,156	12,000	10,828	10,828

Table 2
Animal Health (Section 1433) Fund Allocations
FY 1980 to 1987

AES = Agricultural Experiment Station
SVM = Schools and Colleges of Veterinary Medicine
* = AES and SVM combined

	1980	1981	1982	1983	1984	1985	1986	1987
ALABAMA								
AES, Auburn Univ.	\$104,005	\$108,063	\$89,645	\$88,463	\$84,301	\$86,828	\$ 75,960	\$76,229
SVM, Auburn Univ.	\$27,320	\$23,668	\$21,560	\$21,006	\$22,391	\$29,764	\$ 32,714	\$32,829
SVM, Tuskegee Inst.	\$24,325	\$26,886	\$20,435	\$21,103	\$16,454	\$10,998	\$ 5,932	\$5,953
ALASKA								
AES, Univ. of AK	\$9,602	\$11,589	\$12,503	\$15,053	\$13,924	\$9,318	\$8,930	\$8,948
ARIZONA								
AES, Univ. of AZ	\$66,874	\$73,426	\$60,007	\$59,239	\$54,686	\$57,164	\$56,615	\$57,238
ARKANSAS								
AES, Univ. of AR	\$83,340	\$91,359	\$81,957	\$81,621	\$79,001	\$78,085	\$72,216	\$73,241
CALIFORNIA								
AES, U. of CA-Berk	\$218,204	\$232,257	\$203,790	\$212,367	\$226,345	\$245,028	\$235,486	\$237,542
SVM, U. of CA-Dav	\$85,821	\$160,537	\$177,166	\$199,317	\$188,341	\$196,346	\$183,479	\$185,029
COLORADO								
AES, CO State Univ.	*232,980	*260,767	*276,285	*260,477	*262,454	*230,633	*250,439	*252,333
SVM, CO State Univ.								
CONNECTICUT								
AES, U. of CT-Storrs	\$16,840	\$17,924	\$20,041	\$22,256	\$24,065	\$23,806	\$22,348	\$22,488
DELAWARE								
AES, U. of Delaware	\$14,901	\$16,814	\$17,401	\$16,776	\$16,187	\$14,380	\$15,091	\$15,694
FLORIDA								
AES, Univ. of FL	\$94,598	\$98,792	\$82,307	\$81,509	\$79,028	\$82,885	\$77,199	\$77,386
SVM, Univ. of FL	\$14,011	\$15,811	\$15,821	\$23,915	\$34,538	\$49,013	\$59,707	\$59,851

GEORGIA	1980	1981	1982	1983	1984	1985	1986	1987
AES, U. of GA	\$46,979	\$49,398	\$40,281	\$37,903	\$33,989	\$29,647	\$22,818	\$22,722
SVM, U. of GA	\$130,171	\$137,082	\$124,516	\$130,479	\$136,986	\$143,203	\$129,422	\$128,880
HAWAII								
AES, U. of HI	\$8,481	\$9,156	\$8,341	\$8,458	\$8,314	\$7,943	\$7,482	\$7,308
IDAHO								
AES, U. of ID	\$73,323				\$71,230	\$64,687	\$53,990	\$53,654
SVM, U. of ID	\$27,517	*104,670	*85,447	*82,667	\$13,487	\$15,638	\$19,085	\$18,965
ILLINOIS								
SVM, U. of IL	*200,909	*200,150	*167,905	\$164,312	\$171,958	*179,934	\$169,195	*167,401
INDIANA								
SVM, U. of IN	*131,077	*141,379	*120,908	*123,647	*123,794	*123,252	\$109,865	*109,459
IOWA								
AES, IA State U.	\$35,405	\$42,338	\$51,691	\$64,009	\$70,018	\$67,881	\$59,179	\$56,794
SVM, IA State U.	\$311,942	\$326,415	\$280,350	\$261,622	\$254,464	\$285,524	\$247,015	\$236,975
KANSAS								
SVM, U. of KS	*194,993	*206,457	*185,103	*186,541	*190,193	*184,651	*172,068	*175,000
KENTUCKY								
AES, U. of KY	\$107,071	\$109,265	\$93,303	\$98,340	\$98,166	\$98,092	\$92,813	\$92,429
LOUISIANA								
AES, LA St. U.	\$101,978	\$110,564	\$94,090	\$89,607	\$84,321	\$80,562	\$73,044	\$73,051
SVM, LA St. U.	\$11,489	\$15,512	\$17,501	\$25,013	\$30,105	\$30,042	\$25,012	\$25,014
MAINE								
AES, U. of ME	\$23,455	\$25,046	\$24,622	\$22,675	\$2,012	\$18,102	\$16,108	\$16,074
MARYLAND								
AES, U. of MD	\$64,442	\$68,862	\$54,976	\$57,058	\$50,065	\$48,548	\$46,140	\$46,867
John Hopkins U.	\$15,787	\$15,584	\$10,449	\$0	\$0	\$0	\$0	\$0

MASSACHUSETTS	1980	1981	1982	1983	1984	1985	1986	1987
AES, Univ. of MA	\$23,705	\$21,738	\$16,945	\$15,670	\$12,126	\$10,620	\$9,695	\$9,676
SVM, Tufts Univ.	\$0	\$28,052	\$36,068	\$36,849	\$56,192	\$51,016	\$43,757	\$43,670
MICHIGAN								
AES, MI St. Univ.		\$91,319	\$68,783					
SVM, MI St. Univ.	*148,301	\$51,366	\$47,294	*110,149	*107,814	*103,969	\$95,376	*96,236
MINNESOTA								
AES, U. of MN	\$81,970	\$84,055	\$76,364	\$70,268	\$74,718	\$82,115	\$84,221	\$82,919
SVM, U. of MN	\$125,357	\$144,017	\$124,668	\$132,156	\$123,487	\$111,182	\$94,497	\$93,043
MISSISSIPPI								
AES, MS St. U.	*75,867	*81,045	*76,879	\$69,523	\$62,566	*52,007	\$50,876	*51,331
MISSOURI								
AES, U. of MO	\$75,175	\$66,293	\$45,869	\$42,073	\$61,934	\$73,452	\$54,115	\$53,153
SVM, U. of MO	\$87,841	\$121,398	\$123,728	\$121,225	\$93,589	\$67,853	\$93,453	\$91,790
MONTANA								
AES, MT St. U.	\$106,421	\$111,624	\$89,650	\$83,889	\$77,041	\$77,156	\$78,952	\$79,178
NEBRASKA								
AES, U. of NE	\$180,942	\$203,947	\$184,801	\$190,134	\$191,682	\$193,987	\$180,744	\$184,744
NEVADA								
AES, U. of NV	\$30,751	\$30,547	\$23,947	\$21,672	\$18,647	\$17,365	\$17,280	\$17,629
NEW HAMPSHIRE								
AES, U. of NH	\$16,872	\$16,206	\$12,753	\$12,482	\$11,678	\$11,190	\$10,135	\$10,100
NEW JERSEY								
AES, Rutgers U.	\$31,407	\$32,008	\$27,466	\$28,707	\$26,715	\$26,978	\$21,357	\$21,308
NEW MEXICO								
AES, NM St. U.	\$49,104	\$50,407	\$43,831	\$39,689	\$38,421	\$41,159	\$40,068	\$40,874
NEW YORK								
AES, Cornell U.	\$24,621	\$38,475	\$43,554	\$51,701	\$50,473	\$51,250	\$54,007	\$53,703
SVM, Cornell U.	\$203,053	\$223,216	\$188,889	\$199,730	\$206,594	\$221,233	\$212,026	\$210,833

	1980	1981	1982	1983	1984	1985	1986	1987
NORTH CAROLINA								
AES, NC St. U.	*125,158	*126,026	*101,339	*97,640	*97,193	*100,061	*100,096	*102,061
NORTH DAKOTA								
AES, ND St. U.	\$67,213	\$69,565	\$57,879	\$56,734	\$57,644	\$58,502	\$56,150	\$56,680
OHIO								
AES, OH St. U.	\$98,576	\$89,550	\$65,621	\$61,952	\$64,874	\$70,716	\$69,994	\$70,441
SVM, OH St. U.	\$51,921	\$60,966	\$69,974	\$70,324	\$70,147	\$53,379	\$46,557	\$46,857
OKLAHOMA								
AES, OK St. U.	\$148,637	\$157,722						
SVM, OK St. U.	\$6,145	\$5,066	*130,813	*129,962	*123,764	*125,298	\$111,228	*111,547
OREGON								
AES, OR St. U.	\$58,795	\$66,998	\$63,963	\$68,444	\$62,117	\$53,015	\$47,354	\$47,615
SVM, OR St. U.	\$54,244	\$59,314	\$50,978	\$40,850	\$37,633	\$42,804	\$43,533	\$43,774
PENNSYLVANIA								
AES, U. of PA	\$67,793	\$64,985	\$55,225	\$52,832	\$52,447	\$52,337	\$52,983	\$52,638
SVM, U. of PA	\$74,501	\$97,406	\$105,426	\$117,555	\$119,287	\$108,886	\$95,497	\$94,875
Lehigh Univ.	\$2,791	\$0	\$0	\$0	\$0	\$0	\$0	\$0
PUERTO RICO								
AES, U. of PR	\$19,280	\$16,935	\$16,008	\$16,418	\$15,292	\$14,543	\$13,217	\$13,218
RHODE ISLAND								
AES, U. of RI	\$12,199	\$15,231	\$12,658	\$13,549	\$14,402	\$14,910	\$12,428	\$12,413
SOUTH CAROLINA								
AES, Clemson U.	\$28,671	\$28,397	\$23,241	\$23,012	\$23,754	\$23,555	\$21,680	\$21,802
SOUTH DAKOTA								
AES, SD St. U.	\$118,702	\$125,871	\$109,615	\$105,878	\$101,127	\$96,112	\$88,582	\$87,493
TENNESSEE								
AES, U. of TN	*73,301	*82,137	*73,990	*76,904	*74,629	*70,441	*62,737	*63,243
SVM, U. of TN								
TEXAS								
AES, TX A&M U.	*425,692	*436,027	*343,157	*319,658	*331,193	*346,564	*347,878	*350,953
SVM, TX A&M U.								

	1980	1981	1982	1983	1984	1985	1986	1987
UTAH								
AES, UT St. U.	\$52,768	\$60,889	\$61,031	\$61,301	\$60,935	\$57,344	\$49,812	\$49,863
VERMONT								
AES, U. of VT	\$19,305	\$19,674	\$17,148	\$18,253	\$18,977	\$18,298	\$16,664	\$16,345
VIRGINIA								
AES, VPI & SU	*85,377	*95,619	*86,636	*90,487	*84,512	*90,624	*83,696	*85,449
SVM, VPI & SU								
WASHINGTON								
AES, WA St. U.	\$37,457	\$35,524	\$28,038	\$27,741	\$30,950	\$34,631	\$35,171	\$35,206
SVM, WA St. U.	\$94,349	\$115,483	\$110,128	\$115,258	\$111,666	\$116,010	\$104,469	\$104,571
WEST VIRGINIA								
AES, WV Univ.	\$21,579	\$23,531	\$18,317	\$17,463	\$16,035	\$16,267	\$14,165	\$14,216
WISCONSIN								
AES, U. of WI	\$225,816	\$239,723	\$215,841					
SVM, U. of WI	\$0	\$0	\$0	*212,814	*213,497	*208,846	*196,921	*193,910
WYOMING								
AES, U. of WY	\$50,106	\$51,986	\$43,044	\$42,162	\$42,203	\$43,265	\$40,525	\$40,539
TOTAL	\$5,760,000	\$6,240,000	\$5,529,600	\$5,518,541	\$5,496,422	\$5,474,304	\$5,476,000	\$5,191,248

TABLE 3

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1987

Commodity and Disease	1979-1984		1985		1986		1987		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
BEEF CATTLE										
Respiratory Diseases	50	\$ 6,030,996	6	\$ 961,759	7	\$ 994,418	7	\$ 994,418	70	\$ 8,981,159
Reproductive Diseases (including Anestrus)	26	\$ 3,271,517	5	\$ 599,505	4	\$ 466,692	5	\$ 611,584	40	\$ 4,949,298
Enteric Diseases	30	\$ 2,902,194	4	\$ 473,954	0	---	0	---	34	\$ 3,376,148
Metabolic Diseases	5	\$ 436,350	0	---	1	\$ 134,955	1	\$ 134,955	7	\$ 706,260
Toxicosis	5	\$ 456,162	0	---	0	---	0	---	5	\$ 456,162
Bluetongue	5	\$ 609,207	1	\$ 139,303	1	\$ 144,892	0	---	7	\$ 893,402
Internal Parasites	19	\$ 2,092,304	2	\$ 147,366	1	\$ 135,418	1	\$ 135,418	23	\$ 2,540,506
External Parasites	11	\$ 992,951	1	\$ 100,000	0	---	0	---	12	\$ 1,092,951
Other Diseases	2	\$ 100,920	0	---	0	---	0	---	2	\$ 100,920
SUBTOTAL	153	\$16,892,601	19	\$2,421,887	14	\$1,876,375	14	\$1,876,375	200	\$23,096,806

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1987

Commodity and Disease	1979-1984		1985		1986		1987		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
DAIRY CATTLE										
Mastitis	32	\$2,573,333	4	\$ 368,439	3	\$ 320,916	3	\$ 320,916	42	\$ 3,583,604
Respiratory Diseases	10	\$ 868,683	2	\$ 157,902	1	\$ 87,250	1	\$ 87,250	14	\$ 1,201,085
Reproductive Diseases (including Anestrus)	22	\$2,291,063	2	\$ 298,316	2	\$ 300,000	2	\$ 300,000	28	\$ 3,189,379
Enteric Diseases	9	\$ 669,739	2	\$ 210,536	4	\$ 454,404	4	\$ 454,404	19	\$ 1,789,083
Metabolic Diseases	6	\$ 502,805	0	---	1	\$ 144,142	1	\$ 144,142	8	\$ 791,089
Bluetongue	1	\$ 132,414	0	---	0	---	0	---	1	\$ 132,414
Internal Parasites	2	\$ 73,245	0	---	0	---	0	---	2	\$ 73,245
External Parasites	1	\$ 58,500	0	---	0	---	0	---	1	\$ 58,500
Other Diseases	4	\$ 384,260	0	---	0	---	0	---	4	\$ 384,260
SUBTOTAL	87	\$7,554,042	10	\$1,035,193	11	\$1,306,712	11	\$1,306,712	119	\$11,202,659

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1987

Commodity and Disease	1979-1984		1985		1986		1987		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
POULTRY										
Respiratory Diseases	36	\$2,545,981	4	\$ 356,656	4	\$ 270,417	4	\$ 411,500	48	\$ 3,584,554
Skeletal Diseases	5	\$ 573,349	0	---	1	\$ 102,142	0	---	6	\$ 675,491
Enteric Diseases	9	\$ 676,129	1	\$ 74,230	2	\$ 159,250	1	\$ 133,185	13	\$ 1,042,794
Neoplastic Diseases (Incl. Marek's Dis.)	6	\$ 409,302	0	---	1	\$ 75,000	0	---	7	\$ 484,302
Internal Parasites	3	\$ 337,350	1	\$ 68,432	0	---	0	---	4	\$ 405,782
Toxicosis	4	\$ 355,428	0	---	0	---	0	---	4	\$ 355,428
Other Diseases	3	\$ 379,824	2	\$ 213,993	1	\$ 93,275	2	\$ 158,399	8	\$ 845,491
SUBTOTAL	66	\$5,277,363	8	\$ 713,311	9	\$ 700,084	7	\$ 703,084	90	\$ 7,393,842

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1987

Commodity and Disease	1979-1984		1985		1986		1987		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
SWINE										
Enteric Diseases	29	\$2,331,989	3	\$ 221,456	4	\$ 315,021	4	\$ 459,172	40	\$ 3,327,638
Respiratory Diseases	13	\$1,279,848	2	\$ 225,455	2	\$ 270,417	2	\$ 275,852	19	\$ 2,051,572
Reproductive Diseases	8	\$ 789,991	1	\$ 131,389	1	\$ 91,600	2	\$ 246,311	12	\$ 1,259,291
Pseudorabies	5	\$ 668,174	2	\$ 267,071	1	\$ 149,464	0	---	8	\$ 1,084,709
MMA	8	\$ 627,713	0	---	1	\$ 150,000	0	---	9	\$ 777,713
Internal Parasites	6	\$ 489,663	2	\$ 153,337	0	---	0	---	8	\$ 643,000
External Parasites	2	\$ 187,980	0	---	0	---	0	---	2	\$ 187,980
Toxicosis	7	\$ 553,957	1	\$ 58,006	0	---	0	---	8	\$ 611,963
Skeletal Diseases	4	\$ 320,386	0	---	0	---	0	---	4	\$ 320,386
(Lameness)										
SUBTOTAL	82	\$7,249,701	10	\$1,056,714	9	\$ 976,502	8	\$ 981,335	110	\$10,264,252

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1987

Commodity and Disease	1979-1984		1985		1986		1987		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
SHEEP & GOATS										
Respiratory Diseases	3	\$ 286,426	0	---	0	---	1	\$ 90,375	4	\$ 376,801
Predator Control	6	\$ 382,404	0	---	0	---	0	---	6	\$ 382,404
Reproductive Diseases	4	\$ 250,920	0	---	0	---	0	---	4	\$ 250,920
Bluetongue	3	\$ 282,000	1	\$ 120,316	0	---	1	\$ 150,000	5	\$ 552,316
Caseous Lymphadenitis	3	\$ 244,337	1	\$ 147,031	0	---	0	---	4	\$ 391,368
Contagious Ecthyma	1	\$ 147,063	0	---	0	---	0	---	1	\$ 147,063
Internal Parasites	6	\$ 480,056	0	---	0	---	0	---	6	\$ 480,056
Other Diseases	4	\$ 192,368	0	---	2	\$ 270,417	1	\$ 270,417	7	\$ 733,202
SUBTOTAL	30	\$2,265,574	2	\$ 267,347	2	\$ 270,417	3	\$ 510,792	37	\$ 3,314,130

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1987

<u>Commodity and Disease</u>	<u>1979-1984</u>		<u>1985</u>		<u>1986</u>		<u>1987</u>		<u>Total</u>	
	<u>Projects</u>	<u>Funds</u>	<u>Projects</u>	<u>Funds</u>	<u>Projects</u>	<u>Funds</u>	<u>Projects</u>	<u>Funds</u>	<u>Projects</u>	<u>Funds</u>
HORSES										
Respiratory Diseases	9	\$ 641,485	1	\$105,000	1	\$107,205	0	---	11	\$ 853,690
Enteric Diseases	2	\$ 158,255	1	\$ 73,040	0	---	2	\$162,250	5	\$ 393,545
Musculoskeletal Diseases	4	\$ 466,000	0	---	0	---	0	---	4	\$ 466,000
Internal Diseases	2	\$ 229,270	0	---	1	\$ 55,045	0	---	3	\$ 284,315
SUBTOTAL	17	\$1,495,010	2	\$ 178,040	2	\$162,250	2	\$162,250	23	\$1,997,550

ANIMAL HEALTH SPECIAL RESEARCH GRANTS AWARDS
Fiscal Years 1979-1987

Commodity and Disease	1979-1984		1985		1986		1987		Total	
	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds	Projects	Funds
AQUACULTURE										
Infectious Diseases	11	\$881,872	2	\$89,308	3	\$108,167	2	\$108,167	18	\$1,079,347
Parasites	2	\$170,777	0	---	0	---	0	---	2	\$170,777
		-----		-----		-----		-----		-----
SUBTOTAL	13	\$1,052,649	2	\$89,308	3	\$108,167	2	\$108,167	18	\$1,250,124
TOTAL RESEARCH										
FOR ALL COMMODITIES -	437	\$41,817,449	54	\$5,761,800	51	\$5,408,340	47	\$5,408,340	599	\$58,395,929

ANIMAL HEALTH SPECIAL RESEARCH GRANTS
FISCAL YEAR 1987

AREA	NUMBER OF PROPOSALS	PROPOSALS FUNDED	SUCCESS RATE	AMOUNT REQUESTED	AMOUNT GRANTED	COMMODITY
<u>BEEF AND DAIRY CATTLE</u>						
Reproductive Diseases	55	7	13%	\$7,448,655	\$911,584	Beef \$611,584 Dairy \$300,000
Respiratory Diseases	43	8	19%	\$5,986,539	\$1,081,668	Beef \$994,418 Dairy \$87,250
Enteric Diseases	22	4	18%	\$2,817,914	\$454,404	Beef \$0 Dairy \$454,404
Metabolic Diseases	12	2	17%	\$1,491,117	\$279,057	Beef \$134,955 Dairy \$144,142
Parasitic Diseases	28	1	4%	\$3,039,525	\$135,418	Beef \$135,418 Dairy \$0
Mastitis	20	3	15%	\$2,450,261	\$320,916	Beef \$0 Dairy \$320,916
				tot. cattle \$3,183,087		
<u>SWINE</u>						
Enteric Diseases	20	4	20%	\$2,516,878	\$459,172	
Respiratory Diseases	22	2	9%	\$2,780,966	\$275,852	
Reproductive Diseases	11	2	18%	\$1,269,129	\$246,311	
Metabolic & Musculo-Skeletal Diseases	5	0	0%	\$545,074	\$0	
Parasitic Diseases	5	0	0%	\$1,238,494	\$0	
				total	\$981,335	
<u>POULTRY</u>						
Respiratory Diseases	21	4	19%	\$2,483,098	\$411,500	
Metabolic & Immunologic Diseases	16	2	13%	\$1,985,256	\$158,399	
Enteric Diseases	12	1	8%	\$1,275,796	\$133,185	
Musculo-Skeletal Diseases	3	0	0%	\$440,105	\$0	
				total	\$703,084	
<u>SHEEP & GOATS</u>						
	18	3	17%	\$2,022,019	\$270,417	
				total	\$270,417	
<u>HORSES</u>						
	24	2	8%	\$2,520,453	\$162,250	
				total	\$162,250	
<u>AQUACULTURE</u>						
	16	2	12%	\$1,078,904	\$108,167	
				total	\$108,167	
TOTALS ---			353	47	13%	\$5,408,340
						\$5,408,340

Table 5

Specific Areas and Appropriate Percentages
Recommended for Funding in Special Grants

<u>COMMODITY</u>	<u>PERCENT OF FUNDS</u>
Beef cattle - list the following subcategories as eligible areas of research.	41.0
1. Respiratory diseases	
2. Reproductive diseases	
3. Digestive and enteric diseases	
4. Parasitic diseases	
5. Metabolic diseases with no specific diseases identified as high priorities	
Dairy Cattle	18.0
1. Mastitis	
2. Reproductive diseases	
3. Respiratory diseases	
4. Digestive and enteric diseases	
5. Metabolic diseases with no specific diseases identified as high priorities	
Swine	18.0
1. Enteric diseases	
2. Respiratory diseases	
3. Reproductive diseases	
4. Metabolic and musculoskeletal disease	
5. Parasitic diseases	
Poultry	13.0
1. Respiratory diseases	
2. Metabolic and immunologic diseases	
3. Enteric diseases	
4. Skeletal diseases	
Sheep and Goats	5.0
1. Musculoskeletal diseases	
2. Respiratory diseases	
3. Digestive and enteric diseases	
4. Internal parasitic diseases with no specific diseases identified as high priorities	
Horses	3.0
1. Respiratory diseases	
2. Digestive and enteric diseases	
3. Reproductive diseases	
4. Musculoskeletal diseases with no specific diseases identified as high priorities	
Aquaculture	2.0
1. Infectious diseases	
2. Parasitic diseases	

Table 6

SUMMARY OF ANIMAL HEALTH AND DISEASE RESEARCH PRIORITIES

Organizations representing all of the commodities have developed animal disease research priorities for each commodity as determined by selected organizations.

Beef Cattle Health Research Needs

National Cattlemen's Association (1986)

1. Disease predisposition and alteration of basic cellular physiology as affected by:
 - a. Nutritional factors
 - b. Genetic factors
 - c. Environmental factors
 - d. Infectious agents
 - e. Immunological factors
2. Current visible disease priorities (determined annually)
3. Sub-clinical Disease - The ability to recognize their existence and effect on performance
4. Diagnostic capabilities, interpretation, and standardization of methodology to stimulate the development of diagnostic systems for animals, environments, feedstuffs, and infective agents.
5. Include immune enhancement as an integral part of all research
6. Develop a national computerized model of epidemiology to link cattle diseases and production economics

North Central Advisory Committee (NCA-2) (1986)

1. Respiratory Diseases
2. Enteric diseases
3. Reproductive diseases
4. Infectious keratoconjunctivitis (pinkeye)
5. Infectious pododermatitis (foot rot)
6. Parasitic diseases
7. Environmental and toxic diseases
8. Encephalitic diseases
9. Clostridial diseases

Dairy Health Research Needs

Presented by Robert Kindig, Conestoga, Pennsylvania (1986)

Production efficiency research, including health research, cannot relax even though production efficiency currently out-strips the dairy industry's efficiency in marketing its product. The long "lead-time" from research initiation to farm adoption of new techniques means the American economy must continue to develop new and better technology. Consumers are the ultimate beneficiaries. Dairy farmers believe maximum productive efficiency should

continue to be encouraged for the health of the dairy industry and the American economy.

The dairy industry believes health research should focus on three specific areas of concern which are mastitis research, reproduction research, and Johne's Disease research.

1. Mastitis Research:

The following mastitis research needs were developed by the National Mastitis Council:

- a. Milking Equipment and Mastitis
There are few reliable data defining characteristics of milking machines that influence incidence and severity of mastitis.
- b. The Dry Period and Mastitis
New methods of treatment and prophylaxis in the dry period are needed.
- c. Specific Immunity and Immunization
There is need for study of the mechanisms of immunity and potential effective vaccines.
- d. Non-Specific Resistance
Resistance research areas include integrity of the teat canal barrier to infection, phagocytosis in the mammary gland and various antibacterial factors in milk and dry period secretions.
- e. Integrated Mastitis Control Program

Development of integrated mastitis control systems requires validation of management practices which minimize the incidence of clinical mastitis, the level of subclinical infection and production loss.

2. Reproduction Research:

- a. Estrus detection
- b. Retained placenta
- c. Cystic ovaries
- d. Abortion-embryonic death

Other needs for reproduction research are:

- a. Reproductive disease (brucellosis, leptospirosis, vibriosis, low-grade infection, etc.)
- b. Semen processing and storage
- c. Environmental effects on reproduction (such as ambient temperature) and methods to minimize these effects.

3. Johne's Disease Research:

Johne's Disease recently has become a serious threat to dairy cattle. It is believed to affect 11-20% of all dairy animals in Wisconsin and Northeast United States. Between 15 and 35 percent of all herds probably have one or more animals infected with Johne's.

Fecal culture is the most reliable diagnostic test, but it also is the least convenient. Cultural identification takes from six weeks to 3-4 months. One of the major areas of current research is to develop a test that is as definitive as the fecal culture test but is much quicker.

North Central Advisory Committee (NCA-2) (1984)

1. Reproductive Diseases
2. Enteric and Johne's Disease
3. Mastitis
4. Digestive and metabolic diseases associated with high production and high energy rations
5. Musculo-skeletal diseases; arthritis and foot rot
6. Respiratory diseases including calf pneumonia
7. Leucosis

Swine Disease Research Needs

National Pork Producers Council

Presented by David Meeker (1987)

Since 1971, the National Pork Producers Council (NPPC) has coordinated a system of providing seed money for research projects that meet on-the-farm needs. Priority needs are developed biannually through the polling of a random sample of NPPC's membership, and through discussions of a producer policy development group.

A committee of well respected producers and researchers selected from across the nation take the producer-developed priorities and match them with dozens of project proposals that are submitted by the nation's leading researchers. The proposals are judged by the committee on their feasibility, their scientific merit, and how they fit into the priorities that have been established by pork producers.

Since 1971, when the program started, \$2,300,000 in producer checkoff funds have been invested in nearly 330 separate research projects. In most cases, the producer funding is enhanced by additional funding from other sources, so that the total impact is much greater than the initial producer grant.

In the years ahead, fierce competition for the consumer protein dollar means that research will have an increasing impact on the success or failure of pork industry efforts.

The NPPC's Research Grants Program can provide the pork industry the opportunity for meaningful and targeted funding of important research projects that will continue to meet pork producer needs.

The following categories have been identified by producers as important research areas:

PRODUCTION RESEARCH

A. Prevention and Treatment of Disease

1. Respiratory
2. Enteric
3. Reproductive
4. Structural
5. Parasitic
6. Other

B. Breeding and Genetics

1. Disease Resistance
2. Selection Procedures
3. Improving Carcass Composition
4. Growth, Development and Lactation
5. Crossbreeding

C. Nutrition

1. Nutrition and Nutrient Requirements
2. Feed Additive Alternatives
3. Total Herd Feed Efficiency
4. Feed Processing and Quality Control

- D. Reproductive Physiology
 - 1. Litter Size
 - 2. Reproductive Failure
 - 3. Longevity of Breeding stock
 - 4. Manipulation of Gametes and Embryos
 - 5. Semen Quality and Artificial Insemination
- E. Animal Care and Environmental Management
 - 1. Air Quality
 - 2. Stress Quantification
 - 3. Worker Health
 - 4. Animal Behavior
 - 5. Facilities and Equipment Design
- F. Market Technology
 - 1. Food Safety
 - 2. Consumer Acceptance and Perceptions
 - 3. Pork Value
 - 4. Identification
 - 5. Predicting Composition
- G. Economics
 - 1. Economic Impact of New Technologies
 - 2. Marketing Alternatives, Strategies and Risk Management
 - 3. Structure of the Industry
 - 4. Computer Applications for Profitability
- H. New Concepts

Above, we have described producers research priorities on their descriptions of on-farm production problems. However, NPPC recognizes the need for some investment of long-term basic research that could be of a high risk nature. New, innovative approaches to production technology may sometimes seem too futuristic for on-farm problem solving. However, these novel ideas and new concepts may yield revolutionary results to benefit producers. Thus, the NPPC Research Committee is requesting proposals of this nature and will allocate a portion of the research funds to this area.

NEW PRODUCT RESEARCH

Producers consistently name new product development among the top research priorities. Packers and processors spend several million dollars each year on research and development of new pork products to better their competition. It is important that producer-funded research in these areas be supportive of private sector efforts. Basic knowledge enhancing pork's usefulness, available to packers, procesors and the food industry, should benefit producers.

Checkoff funds intended for research in the area of new pork product development are administered by the National Live Stock and Meat Board which will begin a grants program in the fall of 1987.

Researchers interested in receiving information about this program should write to: Dr. Janet Williams, Associate Director, Product and Development/Research, National Live Stock and Meat Board, 444 North Michigan Avenue, Chicago, Illinois 60611.

NATIONAL PORK PRODUCERS COUNCIL
RESEARCH PROPOSAL REQUEST INFORMATION FOR 1988-89 FUNDING

The National Pork Producers Council invites research personnel to prepare and present research proposals on the following pork production, health and marketing areas:

- A. Prevention and Treatment of Diseases
- B. Breeding and Genetics
- C. Nutrition
- D. Reproduction Physiology
- E. Animal Care and Environmental Management
- F. Market Technology
- G. Economics
- H. New Concepts

Depending on budget and number of projects approved by our Research Project Selection Committee, up to \$15,000 may be allocated per project proposal. NPPC looks favorably upon interdepartmental cooperation and multidisciplinary approaches to research problems. Some projects will not fit easily into one area, but may bridge two or more of the listed research areas.

Proposals which are accepted will receive funding for one year with one additional year funding possible, depending upon status report and renewal of request in the above/below format, annually. The NPPC also strives to secure funding from other sources at state and national levels to further implement swine research under these categories.

OUTLINE FOR PROPOSALS

1. Cover Page
 - a. Title
 - b. Area of research (A to H above)
 - c. Principal investigator (name, degrees and title)
Department
University
Address
Phone number
(please do not include personal references or curriculum vitae information)
 - d. Co-investigators
 - e. Dollar amount requested
 - f. Funding request (new or 2nd year)
 - g. Indication of proposal copy sent to state pork producer association office
2. Current Status of Problem
3. Value of Proposed Research to the Swine Industry
4. Current Related Research by Investigator and Others. It is important that new projects be coordinated with existing research to avoid unnecessary duplication
5. List of References
6. Immediate Objectives

7. Procedures to Achieve These Objectives
8. Future Objective
9. Schedule for Proposed Research
10. Budget for Project (overhead and indirect costs will NOT be covered by research funds)
 - a. Costs to be covered by this grant. Costs must be indicated in a 3-column format, i.e. University, NPPC, Total
 - b. Other funding requested or anticipated for this project

GENERAL INFORMATION

Well qualified scientists and producers serve on the NPPC Research Project Selection Committee and use eight points to review projects. The producers will evaluate the proposals on:

1. Relevance to the pork industry
2. Whether the research matches producer priorities
3. Practicality
4. Time frame

The scientists will evaluate the proposals on:

5. Experimental design and methods
6. The researcher's understanding of the problem
7. Likelihood of achieving research goals and potential for application
8. Overall scientific value of proposed research

SPECIFIC INFORMATION

Please follow above outline. Limit proposal to not more than seven pages, double spaced, including budget. Only the first seven pages will be evaluated. If you are requesting renewed funding, please send a separate progress report in addition to the research proposal. Send 15 copies of your proposal by December 1, 1987 to:

David Meeker, Ph.D.
Director of Research and Education
National Pork Producers Council
Box 10383
Des Moines, Iowa 50306

North Central Advisory Committee (NCA-2) 1984

1. Enteric diseases
2. Respiratory diseases
3. Psudorabies
4. Perinatal Mortality
5. Effects of environmental factors
6. Arthritis
7. Swine abscesses
8. Toxic diseases
9. Control measures for internal and external parasites

Benjamin Pomeroy

I. General Statement

The value of sales from the production of broilers, eggs and turkeys was approximately \$12.3 billion in 1986. The total number of broilers produced in 1986 was \$4.65 billion, up 4 percent from 1985; the value of the broilers produced was \$6.78 billion, up 19% (Exhibit A). The value of egg production was \$3.52 billion, up 7%. Of the combined value of production, 55 percent was from broilers, 28 percent from eggs, 16 percent from turkeys and 1 percent from other chickens (USDA-Agricultural Statistics Service). The duck and goose industries also contributed to the gross income of the total U.S. poultry industry. The total meat and poultry per capita consumption in 1986 was a record (retail weight basis); 79.2 pounds of beef, 58.3 pounds of pork, 3.3 pounds of veal and lamb, 59.9 pounds of broilers, 13.6 pounds of turkeys and 10 pounds of variety meats (USDA) (Exhibit B).

In 1986, there were no outbreaks of highly pathogenic avian influenza or velogenic Newcastle disease in commercial poultry flocks; however, a low pathogenic strain of H5N2 continued to be identified in live poultry markets and velogenic strains of Newcastle disease virus from imported cage birds. The commercial poultry industry continues to be vulnerable to highly pathogenic infectious agents and the need for ongoing avian disease research activities at the state and federal levels. Further research work has been done in Europe on highly pathogenic form of rhinotracheitis in chickens and turkeys associated with a pneumovirus and complicated by bacterial infections. Preliminary serologic tests of paired serum samples from chicken and turkey flocks with coryza-like syndrome in several poultry raising areas in the U.S. have proved negative. USDA-APHIS-National Veterinary Services Laboratories have developed serologic capabilities to identify the infection. This disease is different from Bordetella avium infection and coronavirus infection.

The industry has reported over the past several years a problem identified as ascites in heavy mature broilers. The etiology is unknown, but research is needed to identify the etiology and develop control measures.

The losses from disease and management related problems and lowered production efficiencies cost the poultry industry yearly \$2.0 billion. It is estimated that 4 percent meat-type chickens, 17 percent of egg type chickens and 8 percent of market turkeys are lost from disease and management related problems each year. In addition, condemnations from disease conditions at the time of processing adds an additional economic loss. The recent publicity on radio, television and in the press of the salmonella contamination of poultry meat has reemphasized the public health significance of this problem and the need for research to reduce the salmonella contamination of meat and poultry products.

Increased investment in research and targeting of high priority disease problems are essential in order to reduce mortality and morbidity losses to improve the production efficiency and profitability of the poultry industry and provide the American consumer with a safe and wholesome product.

The information for this report was collected from members of the American Association of Avian Pathologists and the National Turkey Federation. Many individuals have contributed to this report covering all segments of the poultry industry.

II. Specific Categories and Diseases

Specific categories and certain diseases have been targeted for more research support. Under field conditions, disease problems are often a complex situation involving a combination of diseases, nutrition, management practices and environmental conditions contributing to the situation.

A. Specific Categories

1. Respiratory Diseases - Losses from respiratory diseases account for 50 percent of the mortality and morbidity losses in broilers, egg-type chickens and turkeys. Improved effective vaccines are available for some of the respiratory diseases, but variants continue to emerge. Losses from many of the respiratory infections are increased because of immuno-compromised birds. The two problems cannot be separated.

Research efforts need to be directed in basic areas involving avian biotechnology that will provide the basis for improved diagnostic reagents and vaccines. At the same time health management systems, including good husbandry practices, must be developed that will reduce stress and prevent exposure to diseases.

2. Immune Deficiency Diseases - More research is needed to understand the avian immune systems to assure proper immunizing procedures, identification of factors that contribute to immunopotential or depression and interpretation of diagnostic tests. Of equal importance is a better understanding of the mechanism of immunity by infectious and noninfectious agents.

3. Enteric Diseases - New enteric diseases continue to emerge such as viral enteritis, cryptosporidiosis. Prophylactic medication or vaccination have been effective in controlling coccidiosis, but new approaches are needed to control the disease. Although salmonellosis in poultry is not a major clinical problem to the industry, never the less, it has high public health and economic significance. Research is needed to develop procedures to reduce salmonella contamination in poultry at the production and processing levels.

4. Skeletal Diseases - Fast growing strains of meat-type chickens and turkeys are placing more stress on the skeletal system. Research support is needed for interdisciplinary approach to the problem, involving genetics, nutrition, and interaction of infectious agents and management practices.

5. Neoplastic Diseases - Continued research on immunizing agents against Marek's disease is needed as well as better understanding of the control of lymphoid leukosis by reducing virus infection in breeder flocks.

6. Cardiovascular Diseases - Over the past few years there have been two emerging problems affecting heavy mature broilers. The etiology of ascites and sudden death syndrome is unknown. Research is needed to clarify the cause(s) and methods of control. Cardiovascular disease problems in turkeys need interdisciplinary approach involving genetics, nutrition and interaction of infectious agents and management practices.

B. Specific Targeted Diseases

Chickens-Meat-Type, Egg-Type

1. Respiratory Diseases
 - a. Newcastle Disease
 - b. Avian Influenza
 - c. Colibacillosis
 - d. Infectious Laryngotracheitis
 - e. Infectious Bronchitis
 - f. Mycoplasmosis
2. Immunologic Diseases
 - a. Infectious Bursal Disease
 - b. Marek's Disease
 - c. Mycotoxicosis
3. Enteric Diseases
 - a. Salmonellosis
 - b. Coccidiosis
 - c. Enteric Viruses (Rota, Reoviruses)
4. Skeletal Diseases
 - a. Developmental and Metabolic Disorders
 - i Rotated Tibia
 - ii Tibial Dyschondroplasia
 - b. Infectious and Noninfectious Diseases
 - i Viral Arthritis
 - ii Staphylococcosis
 - iii Femoral Head Necrosis
5. Neoplastic Diseases
 - a. Marek's Disease
 - b. Leukosis/Sercoma Group
 - c. Squamous Cell Carcinoma
6. Cardiovascular Diseases
 - a. Ascites
 - b. Sudden Death Syndrome

Turkeys

1. Respiratory diseases
 - a. Colibacillosis
 - b. Pasteurellosis
 - c. Avian Influenza
 - d. Aspergillosis
 - e. Rhinotracheitis
 - f. Newcastle Disease
 - g. Chlamydiosis

2. Enteric Diseases
 - a. Salmonellosis
 - b. Coccidiosis
 - c. Hemorrhagic Enteritis
 - d. Viral Enteritis
3. Skeletal Diseases
 - a. Development and Metabolic Disorders
 - i. Tibial Dyschondroplasia
 - b. Infectious Diseases
 - i. Osteomyelitis
4. Immunologic Diseases
 - a. Hemorrhagic Enteritis
5. Mycotoxicosis
6. Cardiovascular Diseases
 - a. Perirenal Hemorrhage
 - b. Round Heart
 - c. Aortic Rupture

Sheep Diseases Research Needs

American Sheep Industry (1983)

1. Bluetongue disease - diagnosis and control
2. Foot rot " "
3. Pulmonary/resp. diseases " "
4. Polyarthrititis " "
5. Maintain the IR-4 program for registering drugs for use in minor species

National Wool Growers Association, Inc. (1985)

1. Foot Rot
2. Bluetongue

National Central Advisory Committee (NCA-2) (1984)

1. Respiratory diseases
2. Internal parasites
3. Enteric diseases
4. Reproductive diseases
5. Environmental, metabolic and toxic diseases
6. Foot Rot

Goat Diseases

North Central Advisory Committee (NCA-2) (1984)

1. Reproductive diseases
2. Mastitis
3. Enteric diseases
4. Caprine arthritic encephalitis
5. Foot rot
6. Caseous lymphadenitis

Horse Diseases

North Central Advisory Committee (NCA-2) (1984)

1. Respiratory diseases
2. Musculoskeletal diseases
3. Reproductive diseases
4. Digestive diseases
5. Internal parasites

